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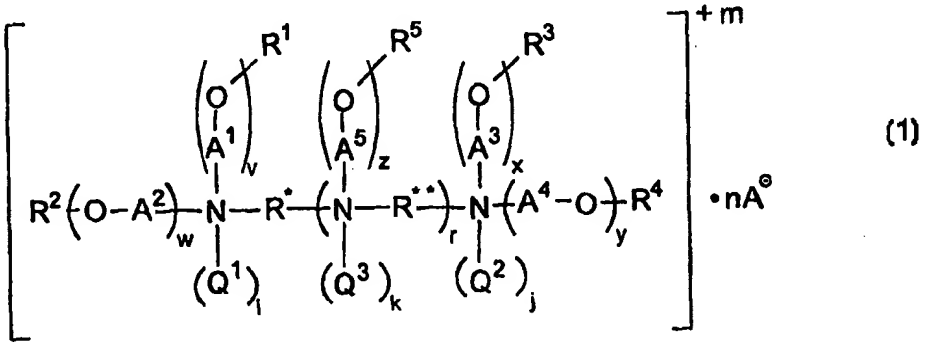
(54) Title: POLYESTER POLYQUATERNARY COMPOUNDS, COMPOSITIONS CONTAINING THEM, AND USES THEREOF



(1)

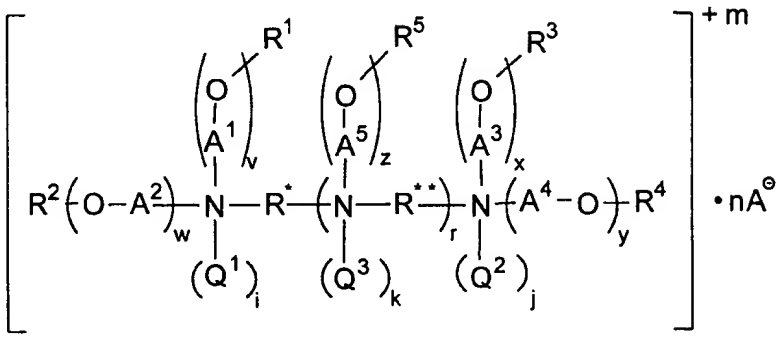
(57) Abstract

A composition comprising: (a) a compound of structural formula (1), wherein each of R* and R** is independently a linear, branched or cyclic alkylene group containing 2 to 12 carbon atoms, wherein no two nitrogen atoms are separated by fewer than 2 carbon atoms; each of A^1, A^2, A^3, A^4, and A^5 is independently a straight or branched alkylene containing 2 to 4 carbon atoms; each of R^1, R^2, R^3, R^4, and R^5 is independently –H or $R^AC(O)$– wherein R^A is straight or branched alkyl or alkenyl containing 7 to 21 carbon atoms and 0 to 4 carbon–carbon double bonds; provided that at least one of R^1, R^2, R^3, R^4, or R^5 is $R^AC(O)$–; each of Q^1, Q^2 and Q^3 is indepently –H, $-CH_3$, $-C_2H_5$, $-C_3H_7$, $-C_4H_5$, benzyl, $-CH_2COOH$, or CH_2COOA^-; or, if R* is a $-CH_2CH_2-$ group, Q^1 and Q^3 together or Q^1 and Q^2 together may be a $-CH_2CH_2-$ group to form a six–membered piperazine ring; or, if R** is a $-CH_2CH_2-$ group, Q^3 and Q^3 together may be a $-CH_2CH_2-$ group to form a six–membered piperazine ring; m is 0 to 4; r is 0 to 2; each of v, w, x, y, and z is independently 1 to 8; i is 0 to 1, j is 0 to 1, and each k is 0 to 1, and the sum of (i+j+k) is 0 to 4; each A^- is independently an anion as defined below; and n is the mumber of modles of A^- needed to give the compound of structural formula (1) a zero net charge; and water, wherein the composition does not contain a significant amount of textile resin treating compounds or silicones.

WHAT IS CLAIMED IS:

1. A composition comprising:

(a) a compound of the following structural formula (1):



wherein each of R* and R** is independently a linear, branched or cyclic alkylene grouup containing 2 to 12 carbon atoms, wherein no two nitrogen atoms are separated by fewer than 2 carrbon atoms;

each of A^1, A^2, A^3, A^4, and A^5 is independently a straight or branched alkylenne containing 2 to 4 carbon atoms;

each of R^1, R^2, R^3, R^4, and R^5 is independently -H or $R^AC(O)$- wherein R^A i is straight or branched alkyl or alkenyl containing 7 to 21 carbon atoms and 0 to 4 carbon-carbon ddouble bonds; provided that at least one of R^1, R^2, R^3, R^4, or R^5 is $R^AC(O)$-;

each of Q^1, Q^2 and Q^3 is independently -H, $-CH_3$, $-C_2H_5$, $-C_3H_7$, $-C_4H_5$, benzyl, $-CH_2COOH$, or $-CH_2COOA^-$; or, if R* is a $-CH_2CH_2-$ group, Q^1 and Q^3 together oor Q^1 and Q^2 together may be a $-CH_2CH_2-$ group to form a six-membered piperazine ring; or, iiif R** is a $-CH_2CH_2-$ group, Q^3 and Q^3 together may be a $-CH_2CH_2-$ group to form a ssix-membered piperazine ring;

m is 0 to 4; r is 0 to 2; each of v, w, x, y, and z is independently 1 to 8;

i is 0 to 1, j is 0 to 1, and each k is 0 to 1, and the sum of (i+j+k) is 0 to 4;

each A^- is independently an anion as defined below; and n is the number of moles of A^- needed to give the compound of structural formula (1) a zero net charge; and

water, wherein the composition does not contain a significant amount of textile resin treating compounds or silicones.

2. The composition according to claim 1, wherein the composition comprises a mixture of two or more different compounds of structural formula (1).

3. The composition according to claim 1, wherein m is from about 1 to 4.

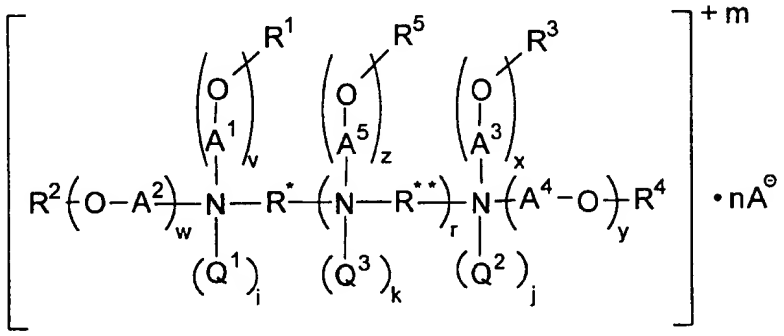
4. The composition according to claim 1, wherein at least one of v, w, x, y, andd z is greater than 1.

5. The composition according to claim 4, wherein each of v, w, x, y, and z is greeater than 1.

6. The composition according to claim 1, further comprising an amine salt, polyaamine salt, or mixture thereof.

7. A composition comprising:

(a) a compound of the following structural formula (1):



wherein each of R* and R** is independently a linear, branched or cyclic alkylene grouup containing 2 to 12 carbon atoms, wherein no two nitrogen atoms are separated by fewer than 2 canrbon atoms;

each of A^1, A^2, A^3, A^4, and A^5 is independently a straight or branched alkylerne containing 2 to 4 carbon atoms;

each of R^1, R^2, R^3, R^4, and R^5 is independently -H or $R^AC(O)$- wherein R^A is straight or branched alkyl or alkenyl containing 7 to 21 carbon atoms and 0 to 4 carbon-carbon ddouble bonds; provided that at least one of R^1, R^2, R^3, R^4, or R^5 is $R^AC(O)$-;

each of Q^1, Q^2 and Q^3 is independently -H, $-CH_3$, $-C_2H_5$, $-C_3H_7$, $-C_4HH_5$, benzyl, $-CH_2COOH$, or $-CH_2COOA^-$; or, if R* is a $-CH_2CH_2-$ group, Q^1 and Q^3 together cor Q^1 and Q^2 together may be a $-CH_2CH_2-$ group to form a six-membered piperazine ring; or, iif R** is a $-CH_2CH_2-$ group, Q^3 and Q^3 together may be a $-CH_2CH_2-$ group to form a ssix-membered piperazine ring;

m is 0 to 4; r is 0 to 2; each of v, w, x, y, and z is independently 1 to 8;

i is 0 to 1, j is 0 to 1, and each k is 0 to 1, and the sum of (i+j+k) is 0 to 4;

each A^- is independently an anion as defined below; and n is the number off moles of A^- needed to give the compound of structural formula (1) a zero net charge; and

(b) a second surfactant selected from the group consisting of anionic surfactaants, cationic surfactants, zwitterionic surfactants, nonionic surfactants, amphoteric surfactants,, and blends thereof.

8. The composition according to claim 7, wherein the composition further comprisises water.

9. The composition according to claim 7, wherein the second surfactant comprises a conventional quaternary compound.

10. The composition according to claim 9, wherein the composition does nnot contain a significant amount of silicones.

11. The composition according to claim 9, wherein at least one of v, w, x, y, annd z is greater than 1.

12. The composition according to claim 11, wherein each of v, w, x, y, and z is greeater than 1.

13. The composition according to claim 7, wherein the secondary surfactant is seleected from the group consisting of: nonylphenol ethoxylates; C_5-C_{20} linear or branched alcoxylates ussing EO, PO, iPO, BO, or mixtures thereof; amine ethoxylates; fatty amide ethoxylates; fatty acidd ethoxylates; carboxylated nonionics; α-polyglucosides; and mixtures thereof.

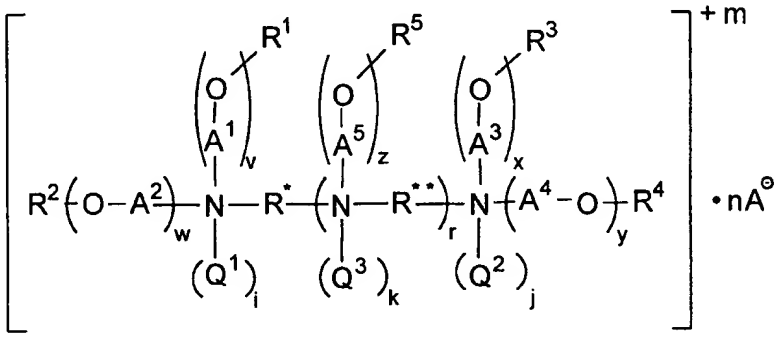
14. The composition according to claim 7, wherein the secondary surfactant is seleected from the group consisting of: ammonium lauryl sulfate, sodium lauryl sulfate, any α-oleffin sulfonate, ammonium laureth sulfate (2 or 3 moles), sodium laureth sulfate (2 or 3 moles), soddium myristyl sulfate, sodium myristeth sulfate (1-4 moles), ammonium xylene sulfonate, soodium xylene sulfonate, TEA dodecylbenzene sulfonate, TEA lauryl sulfate, ammonium pareth sulfate, sodium pareth sulfate, sodium oleth sulfate, derivatives thereof, and mixtures thereof.

15. The composition according to claim 7, wherein the secondary surfactant is seleected from the group consisting of: betaines, sulfosuccinates, mono- and diglycerides, glycinatess, sugars and derivatives thereof, hydroxysultaines, mono- and diacetates, ethoxylated derivatives thereof, and mixtures thereof.

16. The composition according to claim 7, wherein the secondary surfactant is seleccted from the group consisting of an alkanolamide, an amine oxide, and mixtures thereof.

17. A composition comprising:

(a) a compound of the following structural formula (1):



wherein each of R* and R** is independently a linear, branched or cyclic alkylene grouup containing 2 to 12 carbon atoms, wherein no two nitrogen atoms are separated by fewer than 2 canrbon atoms;

each of A^1, A^2, A^3, A^4, and A^5 is independently a straight or branched alkylenne containing 2 to 4 carbon atoms;

each of R^1, R^2, R^3, R^4, and R^5 is independently -H or $R^AC(O)$- wherein R^A is straight or branched alkyl or alkenyl containing 7 to 21 carbon atoms and 0 to 4 carbon-carbon ddouble bonds; provided that at least one of R^1, R^2, R^3, R^4, or R^5 is $R^AC(O)$-;

each of Q^1, Q^2 and Q^3 is independently -H, $-CH_3$, $-C_2H_5$, $-C_3H_7$, $-C_4H_5$, benzyl, $-CH_2COOH$, or $-CH_2COOA^-$; or, if R* is a $-CH_2CH_2-$ group, Q^1 and Q^3 together oor Q^1 and Q^2 together may be a $-CH_2CH_2-$ group to form a six-membered piperazine ring; or, iiif R** is a $-CH_2CH_2-$ group, Q^3 and Q^3 together may be a $-CH_2CH_2-$ group to form a ssix-membered piperazine ring;

m is 0 to 4; r is 0 to 2; each of v, w, x, y, and z is independently 1 to 8;

i is 0 to 1, j is 0 to 1, and each k is 0 to 1, and the sum of (i+j+k) is 0 to 4;

each A^- is independently an anion as defined below; and n is the number off moles of A^- needed to give the compound of structural formula (1) a zero net charge;

(b) a solvatrope or coupling agent or blends thereof; and

(c) an oil or hydrophobic organic component and blends thereof.

18. The composition according to claim 17, wherein the composition further compprises water.